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| EXAMINER | |
|---|---|
| PATHAK, SUDHANSHU C | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2634 | |

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/022,083 | ELLIOTT ET AL. | |
| | Examiner | Art Unit | |
| | Sudhanshu C. Pathak | 2634 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *November 19th, 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *November 19th, 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

1. Claims 1-to-41 are pending in the application.

### *Claim Objections*

2. Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

3. Claim 5 (dependent on claim 2) discloses ".....de-spreading the signal by the second node using a spreading code associated with the signal.....". Claim 2 (dependent on claim 1) discloses ".....filtering the received signal at the second node.....". The Specification on Page 15, lines 18-22 discloses ".....the node 120 may include a filter that is designed to detect the spreading code used by the respective transmitters of other nodes in network 100, such as node 110. After filtering the received data, the node 120 may calculate the energy associated with the filtered signal (i.e., from the matched filter) and compare the detected.....". The specification as described above discloses a de-spreading process implemented by a matched filter. Therefore, the de-spreading and the filtering process is the same.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3, 5-8, 19-22, 25-27, 29, 32 & 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Ramanathan (5,850,592) in further view of Beckwith (6,766,143).

Regarding to Claim 1, 19-20, 27, 29 & 34, the AAPA discloses a wireless network including a plurality of nodes (Specification, Page 2, Paragraph 2, lines 1-2), a method of performing neighbor discovery (Specification, Page 2, Paragraph 4, lines 1-2), the method comprising: generating a signal at a first node for alerting other nodes in the network of the presence of the first node; broadcasting the signal from the first node; receiving the signal at a second node (Specification, Page 2, Paragraph 4, lines 1-2 & Specification, Page 3, Paragraph 4, lines 3-8) {Interpretation: All the three limitations: The generating of a signal (beacon), broadcasting from a first node and receiving at a second node are disclosed in Paragraph 4 of the AAPA}. The AAPA further discloses the beacons to include information based on the type of wireless networking protocol being employed by the network (Specification, Page 3, Paragraph 5, lines 1-3). However, the AAPA does not disclose the beacon signal to be a spread spectrum signal and further does not disclose calculating an energy associated with the received signal; establishing a threshold; determining whether the energy is greater than the threshold; and identifying, by the second node, the first node as a neighbor node when the energy is greater than the threshold.

Ramanathan discloses a wireless communications network comprising a plurality of nodes (Fig. 1 & Column 1, lines 5-15 & Column 3, lines 1-13) {Interpretation: The gateway stations & non-gateway stations are nodes in a network}. Ramanathan further discloses a first station transmitting a beacon signal and a second station receiving the signal (Column 3, lines 41-46 & Column 4, lines 12-16, 49-54); calculating an energy associated with the received signal and establishing a threshold; determining whether the energy is greater than the threshold; and identifying, by the second node, the first node as a neighbor node when the energy is greater than the threshold (Column 4, lines 50-67 & Column 5, lines 21-35 & Fig. 2, element 37 & Fig. 3 & Fig. 4) {Interpretation: The affiliation procedure as described above the node receives a beacon signal transmitted from another signal and depending on the received signal strength (RSSI), and a predetermined threshold value of the RSSI, of the received signal determines if the station is a member of a cluster}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Ramanathan teaches receiving a beacon signal transmitted form a node by another node and depending on the comparison between the received signal strength and a predetermined threshold determining weather the receiving node is a member of a cluster and this can be implemented in the network as described in the AAPA in the neighbor discovery process so as to increase the reliability and of discovery process which is easily implementable. However, the AAPA in view of Ramanathan does not disclose the beacon signal to be a spread spectrum signal.

Beckwith discloses implementing a wireless local area network (WLAN) with spread spectrum technology (Column 1, lines 20-30). Beckwith further discloses multiple common types of spread spectrum systems including frequency hopping spread spectrum (FHSS) and direct sequence spread spectrum (DSSS) (Column 1, lines 50-67 & Column 1, lines 1-20). Beckwith further discloses the IEEE 802.11 standard to support DSSS technology (Column 2, lines 15-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Beckwith teaches a wireless network implementing a DSSS technology and this technology can be implemented in the wireless network as described in AAPA in view of Ramanathan so as to provide a increased immunity to unwanted interference, fading and noisy environment, thus providing a reliable communication link between nodes during the node discovery process. Furthermore, in a wireless communications network an antenna is inherent to receive and transmit the signal.

Regarding to Claims 2-3, 5-7, 21-22, 25-26, 32 & 35-36, the AAPA in view of Ramanathan in further view of Beckwith discloses a wireless network including a plurality of nodes performing a neighbor discovery comprising generating and broadcasting a beacon from one node to another, receiving the beacon signal, calculating an energy associated with the received signal and depending on the received signal strength and a threshold identifying the node broadcasting the beacon signal as a neighbor, wherein the beacon signal is a spread spectrum signal as described above. Ramanathan further discloses transmitting a message from the second node to the first node, the message comprising information identifying the

second node (Column 5, lines 1-19 & Fig. 3, element 63). Beckwith further discloses filtering the received signal at the second node and identifying a spreading code to be used for transmissions from the second node to the first node, wherein the calculating comprises calculating the energy of the filtered signal and wherein the transmitting comprises transmitting the message using the identified spreading code. (Column 2, lines 3-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Ramanathan in further view of Beckwith satisfies the limitations of the claims. Furthermore, it is inherent in DSSS transmitting signal with a specified pseudo-random spreading code and varying the spreading code to differentiate between different transmissions. Furthermore, it is inherent in CDMA (digital wireless) communications systems for a processor to generate the spreading codes and further a processor to comprise a memory to store the spreading codes.

Regarding to Claim 8 & 37-38, the AAPA in view of Ramanathan in further view of Beckwith discloses a wireless network including a plurality of nodes performing a neighbor discovery comprising generating and broadcasting a beacon from one node to another, receiving the beacon signal, calculating an energy associated with the received signal and depending on the received signal strength and a threshold identifying the node broadcasting the beacon signal as a neighbor, wherein the beacon signal is a spread spectrum signal as described above. The AAPA further discloses broadcasting includes at least one of: broadcasting the signal at regular intervals, broadcasting the signal at random or pseudorandom intervals, and

broadcasting the signal using a combination of regular and random or pseudorandom intervals (Specification, Page 3, Paragraph 5, lines 6-8). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Ramanathan in further view of Beckwith satisfies the limitations of the claim.

6. Claims 9, 12, 14, 17, 23, 28, 30 & 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Ramanathan (5,850,592) in further view of Beckwith (6,766,143) in further view of Asghar et al. (6,218,931).

Regarding to Claims 9, 12, 14 & 17, the AAPA discloses a network comprising a plurality of nodes (Specification, Page 2, Paragraph 2, lines 1-5), a first node comprising: a transmitter configured to broadcast a beacon signal (Specification, Page 2, Paragraph 2, lines 1-5 & Specification, Page 2, Paragraph 4, lines 1-2 & Specification, Page 3, Paragraph 4, lines 3-8) {Interpretation: The AAPA discloses all the nodes may be equipped with wireless communications transceivers which include a transmitter and receiver}. However, the AAPA does not disclose a processor configured to generate a spreading sequence that identifies the first node and a receiver configure to receive a message from a second node, the message identifying the second node and indicating that the second node is a neighbor node.

Ramanathan further discloses transmitting a message from the second node to the first node, the message comprising information identifying the second node (Column 5, lines 1-19 & Fig. 3, element 63) {Interpretation: The affiliation procedure

as described above the (second) node receives a beacon signal transmitted from another (first) node and determine if the station is a member of a cluster wherein the second node sends an affiliation request message}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Ramanathan teaches receiving a beacon signal transmitted form a node by another node and depending on the comparison between the received signal strength and a predetermined threshold determining weather the receiving node is a member of a cluster and this can be implemented in the network as described in the AAPA in the neighbor discovery process so as to increase the reliability and of discovery process which is easily implementable. However, the AAPA in view of Ramanathan does not disclose the beacon signal to be a spread spectrum signal.

Beckwith discloses implementing a wireless local area network (WLAN) with spread spectrum technology (Column 1, lines 20-30). Beckwith further discloses multiple common types of spread spectrum systems including frequency hopping spread spectrum (FHSS) and direct sequence spread spectrum (DSSS) (Column 1, lines 50-67 & Column 1, lines 1-20). Beckwith further discloses the IEEE 802.11 standard to support DSSS technology (Column 2, lines 15-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Beckwith teaches a wireless network implementing a DSSS technology and this technology can be implemented in the wireless network as described in AAPA in view of Ramanathan so as to provide a increased immunity to unwanted interference, fading and noisy environment, thus providing a reliable communication

link between nodes during the node discovery process. However, the AAPA in view of Ramanathan in further view of Beckwith does not disclose a processor configured to generate a spreading sequence that identifies a node.

Asghar discloses a code division multiple access (CDMA) network comprising multiple nodes wherein each node further comprises a transmitter and receiver (Abstract, lines 1-6 & Column 3, lines 1-5 & Column 5, lines 26-55 & Fig. 1 & Fig. 5). Asghar further discloses the network using a unique spreading code for each node in the network (Abstract, lines 19-25 & Column 2, lines 3-5, 28-30, 32-40 & Column 3, lines 37-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Asghar teaches implementing a spreading code unique to a node and this can be implemented in the network as described in the AAPA in view of Ramanathan in further view of Beckwith so as to be able to provide increased noise immunity and to be able to identify the node from which the signal is transmitted. Furthermore, it is inherent in CDMA (digital wireless) communications systems for a processor to generate the spreading codes.

Regarding to Claims 10-11 & 15-16, the AAPA in view of Ramanathan in further view of Beckwith in further view of Asghar discloses a wireless network including a plurality of nodes performing a neighbor discovery comprising generating and broadcasting a beacon from one node to another, receiving the beacon signal, calculating an energy associated with the received signal and depending on the received signal strength and a threshold identifying the node broadcasting the beacon signal as a neighbor, wherein the beacon signal is a spread spectrum signal

wherein the spreading sequence identifies the node as described above. The AAPA further discloses broadcasting includes at least one of: broadcasting the signal at regular intervals, broadcasting the signal at random or pseudorandom intervals, and broadcasting the signal using a combination of regular and random or pseudorandom intervals (Specification, Page 3, Paragraph 5, lines 6-8). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Ramanathan in further view of Beckwith satisfies the limitations of the claim.

Regarding to Claims 23, 28, 30 & 33, the AAPA in view of Ramanathan in further view of Beckwith discloses a wireless network including a plurality of nodes performing a neighbor discovery comprising generating and broadcasting a beacon from one node to another, receiving the beacon signal, calculating an energy associated with the received signal and depending on the received signal strength and a threshold identifying the node broadcasting the beacon signal as a neighbor, wherein the beacon signal is a spread spectrum signal as described above. However, the AAPA in view of Ramanathan in further view of Beckwith does not disclose a processor configured to generate a spreading sequence that identifies a node.

Asghar discloses a code division multiple access (CDMA) network comprising multiple nodes wherein each node further comprises a transmitter and receiver (Abstract, lines 1-6 & Column 3, lines 1-5 & Column 5, lines 26-55 & Fig. 1 & Fig. 5). Asghar further discloses the network using a unique spreading code for each node

in the network (Abstract, lines 19-25 & Column 2, lines 3-5, 28-30, 32-40 & Column 3, lines 37-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Asghar teaches implementing a spreading code unique to a node and this can be implemented in the network as described in the AAPA in view of Ramanathan in further view of Beckwith so as to be able to provide increased noise immunity and to be able to identify the node from which the signal is transmitted. Furthermore, it is inherent in CDMA (digital wireless) communications systems for a processor to generate the spreading codes.

7. Claims 4 & 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Ramanathan (5,850,592) in further view of Beckwith (6,766,143) in further view of Proctor (PG-PUB 2004/0196822).

Regarding to Claims 4 & 24, the AAPA in view of Ramanathan in further view of Beckwith discloses a wireless network including a plurality of nodes performing a neighbor discovery comprising generating and broadcasting a beacon from one node to another, receiving the beacon signal, calculating an energy associated with the received signal and depending on the received signal strength and a threshold identifying the node broadcasting the beacon signal as a neighbor, wherein the beacon signal is a spread spectrum signal as described above. However, AAPA in view of Ramanathan in further view of Beckwith does not disclose identifying a directional antenna for transmitting the message.

Proctor discloses a method for transmitting data in a wireless communications network (Abstract, lines 1-3 & Page 1, Paragraphs 3-4). Proctor further discloses the radio units in the network comprising the antenna system to be implemented in multiple detection modes omni-directional mode and a directional mode (Page 1, Paragraphs 9-12). The omni-directional mode is implemented when the received signal has not been identified and once the terminal is located the radio is in a directional mode (Page 1, Paragraphs 9-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Proctor teaches implementing radio units in multiple antenna modes and this can be implemented in the network as described in the AAPA in view of Ramanathan in further view of Beckwith so as to provide a reliable communication link between nodes since the transmission/receiving energy is focused, thus satisfying the limitations of the claims.

8. Claims 13, 18, 31 & 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Ramanathan (5,850,592) in further view of Beckwith (6,766,143) in further view of Asghar et al. (6,218,931) in further view of Proctor (PG-PUB 2004/0196822).

Regarding to Claims 13, 18, 31 & 40-41, the AAPA in view of Ramanathan in further view of Beckwith in further view of Asghar discloses a wireless network including a plurality of nodes performing a neighbor discovery comprising generating and broadcasting a beacon from one node to another, receiving the beacon signal, calculating an energy associated with the received signal and depending on the received signal strength and a threshold identifying the node broadcasting the

beacon signal as a neighbor, wherein the beacon signal is a spread spectrum signal wherein the spreading sequence identifies the node as described above. However, AAPA in view of Ramanathan in further view of Beckwith in further view of Asghar does not disclose identifying a directional antenna for transmitting the message.

Proctor discloses a method for transmitting data in a wireless communications network (Abstract, lines 1-3 & Page 1, Paragraphs 3-4). Proctor further discloses the radio units in the network comprising the antenna system to be implemented in multiple detection modes omni-directional mode and a directional mode (Page 1, Paragraphs 9-12). The omni-directional mode is implemented when the received signal has not been identified and once the terminal is located the radio is in a directional mode (Page 1, Paragraphs 9-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Proctor teaches implementing radio units in multiple antenna modes and this can be implemented in the network as described in the AAPA in view of Ramanathan in further view of Beckwith so as to provide a reliable communication link between nodes since the transmission/receiving energy is focused, thus satisfying the limitations of the claims.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, it is recommended to the applicant to amend all the claims so as to be patentable over the cited prior art of record. A detailed list of pertinent references is included with this Office Action (See Attached "Notice of References Cited" (PTO-892)).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571)-272-3042
- The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sudhanshu C. Pathak

CHIEH M. FAN
SUPERVISORY PATENT EXAMINER